Space Weather Forecast

Issued on Monday, 13 March 2023 at 01:10 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: No Significant Activity.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with only isolated Common class flares, the strongest from a small and indistinct sunspot in the southeast solar disc. There are eleven sunspot regions on the visible disc, however these are generally small, simple and mature, with very little significant growth evident. The main features of interest are the filaments (arcs of plasma held together by the Sun's magnetic field), with one lifting from the Sun's southeast disc, This produced a coronal mass ejection (CME) which is likely on the Earth-Sun line, but directed southward. Further analysis is required to assess if there is any Earth-directed material.

Solar Wind / Geomagnetic Activity: The solar wind speed was mainly at background, between 350-400km/s, only briefly peaking at slightly elevated values of 430 km/s around 12/0900 UTC. Total magnetic field strength was predominantly weak but with a slight moderate period between 12/0600-0900UTC. The important north-south component varied weakly, but with a period of more sustained negative/southward orientation between 12/0600-0900 UTC, peaking at slightly moderate. This component then rotated to be persistently, but weakly, positive (northward). Geomagnetic activity was Quiet to Unsettled (Kp 0-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to remain generally Low with only isolated Common-class flares, and a very slight chance of Moderate flares.

Solar Wind / Geomagnetic Activity: CME from the 10th may pass close enough to Earth to give some glancing influence on day 3 (15th), but this is low confidence. CME from the filament eruption on the 12th requires further analysis but has the potential for an Earth-directed component. Background solar wind speeds are expected day 1 and 2 (13th and 14th). Solar winds are then expected to become slightly elevated due to the arrival of the faster solar wind associated with a coronal hole. Geomagnetic activity is forecast to be mainly Quiet with isolated Unsettled intervals. This rising to Unsettled with a chance of Active intervals on day 3 (15th) from either the coronal hole or CME influence.

Energetic Particles / Solar Radiation: The count rate of energetic particles is forecast to persist at background with no solar radiation storms occurring.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	5	10	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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